

FORM PTO-1449 U.S. Department of Commerce Patent and Trademark Office		Docket No.: INVIT1220-1	Application No.: Unassigned 09/937112
		Applicants: Heyman et al.	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Filing Date: September 19, 2001	Group Art Unit: Unassigned

U.S. PATENT DOCUMENTS

EXAM. INITIALS		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
CW	AA	6,174,669B1	01/16/01	Hayashizaki et al.	435	6	11/20/96

FOREIGN PATENT DOCUMENTS

EXAM. INITIALS		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION (YES/NO)
CW	AB	98/56943	12/17/98	WO	C12P	19/34	No
CW	AC	98/55502	12/10/98	WO	C07K	5/00	No
CW	AD	98/20122	05/14/98	WO	CT2N	15/10	No Abstract only
CW	AE	97/24455	07/10/97	WO	C12Q	—	No
CW	AF	96/34981	11/07/96	WO	C12Q	1/68	No Abstract only
CW	AG	96/19497	06/27/96	WO	C07K	14/07	No
CW	AH	1 018 549 A1	09/18/98	EP	C12N	15/10	No
CW	AI	0 625 572 A1	09/22/93	EP	C12N	15/10	No
CW	AJ	0 373 914 A2	12/13/89	EP	C12N	15/62	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

CW	AK	Carninci, et al. "High-Efficiency Full-Length cDNA Cloning by Biotinylated CAP Trapper," <i>Genomics</i> , 37(3):327-36 (1996) Academic Press, Inc.
	AL	Carninci, et al. "High Efficiency Selection of full-length cDNA by Improved Biotinylated Cap Trapper," <i>DNA Research</i> , 4:61-66 (1997). Universal Academy Press.
	AM	DiGate and Marians, "Molecular Cloning and DNA Sequence Analysis of <i>Escherichia coli topB</i> , the Gene Encoding Topoisomerase III," <i>J. Biol. Chem.</i> 264(30):17924-17930 (1989). The American Society for Biochemistry and Molecular Biology, Inc.
	AN	Edery, et al., "An Efficient Strategy to Isolate Full-Length cDNAs Based on an mRNA Cap Retention Procedure (CAPture)," <i>Mol. Cell. Biol.</i> , 15(6):3363-3371 (1995). American Society for Microbiology.

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CW	AO	Haghishat and Sonenberg. "eIF4G Dramatically Enhances the Binding of eIF4E to the mRNA 5'-Cap Structure," <i>J. Biol. Chem.</i> , 272(35):21677-21680 (1997). The American Society for Biochemistry and Molecular Biology, Inc.
CW	AP	Haghishat et al., "The eIF4G-eIF4E Complex is the Target for Direct Cleavage by the Rhinovirus 2A Proteinase," <i>J. Virol.</i> 70:8444-8450 (1996). American Society for Microbiology.
CW	AQ	Invitrogen Corporation. <i>Invitrogen Catalog</i> , Carlsbad, California, pages 18, 29, 43, 44, 49-52 (1998).
CW	AR	Kato, et al., "Construction of a Human Full-Length cDNA Bank," <i>Gene</i> . 150: 243-250 (1994) Elsevier Science.
CW	AS	Maruyama and Sugano, "Oligo-Capping: A Simple Method to Replace the Cap Structure of Eukaryotic mRNAs with Oligoribonucleotides," <i>Gene</i> . 138:171-174 (1994).

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EXAM. INITIALS		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION (YES/NO)
Clu		WO 01/62892 A2	08/30/2001	PCT	—	—	

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

EXAMINER	<i>Cynthia Wilder</i>	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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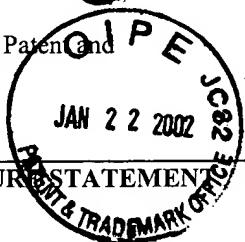
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EXAM. INITIALS		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
CW	AA	4,661,450	04/28/87	Kempe et al.			
CW	AB	4,800,159	01/24/89	Mullis et al.			
CW	AC	5,624,826	04/29/97	Kato, et al.			
CW	AD	5,766,891	06/16/98	Shuman			
CW	AE	5,958,681	09/28/99	Wetmur, et al.			
CW	AF	6,238,884 B1	05/29/01	Short et al.			
CW	AG	6,280,977 B1	08/28/01	Liang et al.			
CW	AH	6,291,213 B1	09/18/01	Rothstein			

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CW	AF	85/04898	11/07/85	WO			
CW	AJ	0 373 914 A2	12/13/89	EP			
CW	AK	0 625,572 A1	09/22/93	EP			
CW	AL	94/29443	12/22/94	WO			
CW	AM	96/19497	06/27/96	WO			
Dup. case	AN	96/34981	11/07/96	WO			
Dup. case	AO	97/24455	07/10/1997	WO			
Dup. case	AP	98/20122	05/14/98	WO			NO

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Duplicate	AQ	98/55502	12/10/98	WO			
Duplicate	AR	98/56943	12/17/98	WO			
CW	AS	00/12687	03/09/00	WO	—	—	
CW	AT	00/56878	09/28/00	WO	—	—	

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

CW	AU	Carninci, et al. "High-Efficiency Full-Length cDNA Cloning by Biotinylated CAP Trapper," <i>Genomics</i> , 37(3):327-36 (1996) Academic Press, Inc.
	AV	Carninci, et al. "High Efficiency Selection of Full-Length cDNA by Improved Biotinylated Cap Trapper," <i>DNA Research</i> , 4:61-66 (1997). Universal Academy Press.
	AW	Cheng and Shuman, "DNA Strand Transfer Catalyzed by Vaccinia Topoisomerase: Ligation of DNAs Bontaining a 3' Mononucleotide Overhang," <i>Nucleic Acids Res.</i> , 28(9):1893-8. (2000). Oxford University Press.
	AX	Cheng and Shuman, "Recombinogenic Flap Ligation Pathway for Intrinsic Repair of Topoisomerase IB-Induced Double-Strand Breaks," <i>Mol. Cell. Biol.</i> 20(21):8059-8068 (2000) American Society for Microbiology.
	AY	Cheng and Shuman, "Site-Specific DNA Transesterification by Vaccinia Topoisomerase: Role of Specific Phosphates and Nucleosides," <i>Biochemistry</i> 38(50):16599-612 (1999) American Chemical Society.
	AZ	Cheng and Shuman, "A Catalytic Domain of Eukaryotic DNA Topoisomerase I," <i>J. Biol. Chem.</i> 273(19):11589-95 (1998) The American Society for Biochemistry and Molecular Biology, Inc.
	AAA	Cheng, et al., "Conservation of Structure and Mechanism Between Eukaryotic Topoisomerase I and Site-Specific Recombinases," <i>Cell</i> . 92(6):841-50 (1998) Cell Press.
	AAB	Cheng, et al., "Mutational Analysis of 39 Residues of Vaccinia DNA Topoisomerase Identifies Lys-220, Arg-223, and Asn-228 as Important for Covalent Catalysis," <i>J. Biol. Chem.</i> 272(13):8263-9 (1997) The American society for Biochemistry and Molecular Biology, Inc.

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CW	AAC	DiGate and Marians, "Molecular Cloning and DNA Sequence Analysis of <i>Escherichia coli topB</i> , the Gene Encoding Topoisomerase III," <i>J. Biol. Chem.</i> 264(30):17924-17930 (1989). The American society for Biochemistry and Molecular Biology, Inc.
	AAD	Edery, et al., "An Efficient Strategy to Isolate Full-Length cDNAs Based on an mRNA Cap Retention Procedure (CAPture)," <i>Mol. Cell. Biol.</i> , 15(6):3363-3371 (1995). American Society for Microbiology.
	AAE	Ericsson, et al., "Characterization of ts 16, a Temperature-Sensitive Mutant of Vaccinia Virus," <i>J. Virol.</i> 69(11):7072-86 (1995) American Society for Microbiology.
	AAF	Gross and Shuman, "Vaccinia Virions Lacking the RNA Helicase Nucleoside Triphosphate Phosphohydrolase II are Defective in Early Transcription," <i>J. Virol.</i> 70(12):8549-5 (1996) American Society for Microbiology.
	AAG	Haghishat and Sonenberg. "eIF4G Dramatically Enhances the Binding of eIF4E to the mRNA 5'-Cap Structure," <i>J. Biol. Chem.</i> , 272(35):21677-21680 (1997). The American society for Biochemistry and Molecular Biology, Inc.
	AAH	Haghishat et al., "The eIF4G-eIF4E Complex is the Target for Direct Cleavage by the Rhinovirus 2A Proteinase," <i>J. Virol.</i> 70:8444-8450 (1996). American Society for Microbiology.
	AAI	Henningfeld and Hecht, "A Model for Topoisomerase I-Mediated Insertions and Deletions with Duplex DNA Substrates Containing Branches, Nicks, and Gaps," <i>Biochemistry</i> 34(18):6120-9. (1995) American Chemical Society.
	AAJ	Invitrogen Corporation. <i>Invitrogen Catalog</i> , Carlsbad, California, pages 18, 29, 43, 44, 49-52 (1998).
	AAK	Janknecht, et al., "Rapid and Efficient Purification of Native Histidine-Tagged Protein Expressed by Recombinant Vaccinia Virus," <i>Proc. Natl. Acad. Sci., USA</i> 88:8972-8976(1991) National Academic of Sciences.
	AAL	Kane and Shuman, "Vaccinia Virus Morphogenesis is Blocked by a Temperature-Sensitive Mutation in the I7 Gene that Encodes a Virion Component," <i>J. Virol.</i> 67(5):2689-98 (1993) American Society for Microbiology.

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Cynthia Weller

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CW	AAM	Kato, et al., "Construction of a Human Full-Length cDNA Bank," <i>Gene</i> . 150: 243-250 (1994) Elsevier Science.
	AAN	Klemm, et al., "Peptide Inhibitors of DNA Cleavage by Tyrosine Recombinases and Topoisomerases," <i>J. Mol. Biol.</i> 299(5):1203-16. (2000) Academic Press, Inc.
	AAO	Klempner, et al., "Identification and Characterization of the orf Virus Type I Topoisomerase," <i>Virology</i> 206:203-215 (1995) Academic Press, Inc.
	AAP	Krogh and Shuman, "Vaccinia Topoisomerase Mutants Illuminate Conformational Changes During Closure of the Protein Clamp and Assembly of a Functional Active Site," <i>J. Biol. Chem.</i> July 5 2001 [Manuscript] The American Society for Biochemistry and Molecular Biology, Inc.
	AAQ	Krogh and Shuman, "Catalytic Mechanism of DNA Topoisomerase IB," <i>Mol. Cell.</i> 5(6):1035-41 (2000) Cell Press.
	AAR	Krogh and Shuman, "DNA Strand Transfer Catalyzed by Vaccinia Topoisomerase: Peroxidolysis and Hydroxylaminolysis of the Covalent Protein-DNA Intermediate," <i>Biochemistry</i> 39(21):6422-32. (2000) American Chemical Society.
	AAS	Krogh, et al., "Effect of 2'-5' Phosphodiesters on DNA Transesterification by Vaccinia Topoisomerase," <i>J. Biol. Chem.</i> 276(24):20907-20912. (2001) The American Society for Biochemistry and Molecular Biology, Inc.
	AAT	Krogh, et al., "Melanoplus Sanguinipes Entomopoxvirus DNA Topoisomerase: Site-Specific DNA Transesterification and Effects of 5'-Bridging Phosphorothiolates," <i>Virology</i> 264(2):441-51. (1999) Academic Press, Inc.
	AAU	Liu, et al., "Mapping the 5' and 3' Ends of Tetrahymena thermophila mRNAs Using RNA Ligase Mediated Amplification of cDNA Ends (RLM-RACE)," <i>Nucleic Acids Research</i> 21(21): 4954-4960. (1993) The Oxford University Press.
	AAV	Lockard, et al., "Labeling of Eukaryotic Messenger RNA 5' Terminus with Phosphorus-32: Use of Tobacco Acid Pyrophosphatase for Removal of Cap Structures," <i>Gene Amplification and Analysis</i> 2:229-251. (1981) Elsevier Science.
	AAW	Maruyama and Sugano, "Oligo-Capping: A Simple Method to Replace the Cap Structure of Eukaryotic mRNAs with Oligoribonucleotides," <i>Gene</i> . 138:171-174 (1994).

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<i>CW</i>	AAX	Morham and Shuman, "Covalent and Noncovalent DNA Binding by Mutants of Vaccinia DNA Topoisomerase I," <i>J. Biol. Chem.</i> 267:15984-15992 (1992) The American Society for Biochemistry and Molecular Biology, Inc.
	AAY	Morham and Shuman, "Phenotypic Selection and Characterization of Mutant Alleles of a Eukaryotic DNA Topoisomerase I," <i>Genes. Dev.</i> 4(4):515-24 (1990) Cold Spring Harbor Laboratory Press.
	AAZ	Palaniyar, et al. "SFV Topoisomerase: Sequence Specificity in a Genetically Mapped Interval," <i>Virology</i> 221:351-354 (1996). American Press, Inc.
	BAA	Petersen and Shuman, "DNA Strand Transfer Reactions Catalyzed by Vaccinia Topoisomerase: Hydrolysis and Glycerolysis of the Covalent Protein-DNA Intermediate," <i>Nucleic Acids Res.</i> 25(11):2091-7 (1997) Oxford University Press.
	BAB	Petersen and Shuman, "Histidine 265 is Important for Covalent Catalysis by Vaccinia Topoisomerase and is Conserved in all Eukaryotic Type I Enzymes," <i>J. Biol. Chem.</i> 272(7):3891-6 (1997) The American Society for Biochemistry and Molecular Biology, Inc.
	BAC	Petersen et al., "Characterization of a DNA Topoisomerase Encoded by Amsacta Moore Entomopoxvirus," <i>Virology</i> 230(2):197-206 (1997) Academic Press, Inc.
	BAD	Petersen, et al., "Mutations within a Conserved Region of Vaccinia Topoisomerase Affect the DNA Cleavage-reLigation Equilibrium," <i>J. Mol. Biol.</i> 1263(2):181-95 (1996) Academic Press Limited.
	BAE	Salazar et al., "The DNA Strand in DNA.RNA Hybrid Duplexes is Neither B-Form nor A-Form in Solution," <i>Biochemistry</i> 32(16):4207-15 (1993) American Chemical Society.
	BAF	Schmitt, et al., "Affinity Purification of Histidine-Tagged Proteins," <i>Molecular Biology Reports</i> 18:223-230 (1993).
	BAG	Sekiguchi and Shuman, "Domain Structure of Vaccinia DNA Ligase," <i>Nucleic Acids Res.</i> 25(4):727-34 (1997) Kluwer Academic Publishers.
	BAH	Sekiguchi and Shuman, "Mutational Analysis of Vaccinia Virus Topoisomerase Identifies Residues Involved in DNA Binding," <i>Nucleic Acids Res.</i> 25(18):3649-56. (1997) Oxford University Press.
	BAI	Sekiguchi and Shuman, "Nick Sensing by Vaccinia Virus DNA Ligase Requires a 5' Phosphate at the Nick and Occupancy of the Adenylate Binding Site On the Enzyme," <i>J. Virol.</i> 71(12):9679-84 (1997) American Society for Microbiology.
	BAJ	Sekiguchi and Shuman, "Site-Specific Ribonuclease Activity of Eukaryotic DNA Topoisomerase I," <i>Mol. Cell.</i> 1(1):89-97.(1997) Cell Press.

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Cynthia Nader

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<i>CW</i>	BAK	Sekiguchi and Shuman, "Covalent DNA Binding by Vaccinia Topoisomerase Results in Unpairing of the Thymine Base 5' of the Scissile Bond," <i>J. Biol. Chem.</i> 271(32):19436-42 (1996). The American Society for Biochemistry and Molecular Biology, Inc.
1	BAL	Sekiguchi and Shuman, "Identification of Contacts Between Topoisomerase I and Its Target DNA by Site-Specific Photocrosslinking," <i>EMBO J.</i> 15(13):3448-57 (1996) Oxford University Press.
	BAM	Sekiguchi and Shuman, "Proteolytic Footprinting of Vaccinia Topoisomerase Bound to DNA," <i>J. Biol. Chem.</i> 270(19):11636-45 (1995) The American Society for Biochemistry and Molecular Biology, Inc.
	BAN	Sekiguchi and Shuman, "Requirements for Noncovalent Binding of Vaccinia Topoisomerase I to Duplex DNA," <i>Nucleic Acids Res.</i> 22(24):5360-5 (1994) Oxford University Press.
	BAO	Sekiguchi and Shuman, "Stimulation of Vaccinia Topoisomerase I by Nucleoside Triphosphates," <i>J. Biol. Chem.</i> 269(47):29760-4 (1994) The American Society for Biochemistry and Molecular Biology, Inc.
	BAP	Sekiguchi and Shuman, "Vaccinia Topoisomerase Binds Circumferentially to DNA," <i>J. Biol. Chem.</i> 269(50):31731-4 (1994) The American Society for Biochemistry and Molecular Biology, Inc.
	BAQ	Sekiguchi, et al., "Resolution of a Holliday Junction by Vaccinia Topoisomerase Requires a Spacer DNA Segment 3' of the CCCTT/ Cleavage Sites," <i>Nucleic Acids Res.</i> 28(14):2658-63. (2000) Oxford University Press.
	BAR	Sekiguchi, et al., "Kinetic Analysis of DNA and RNA Strand Transfer Reactions Catalyzed by Vaccinia Topoisomerase," <i>J. Biol. Chem.</i> 272(25):15721-8 (1997) The American Society for Biochemistry and Molecular Biology, Inc.
	BAS	Sekiguchi, et al., "Mechanism of Inhibition of Vaccinia DNA Topoisomerase by Novobiocin and Coumermycin," <i>J. Biol. Chem.</i> 271(4):2313-22 (1996) The American Society for Biochemistry and Molecular Biology, Inc.
	BAT	Sekiguchi, et al., "Resolution of Holliday Junctions by Eukaryotic DNA Topoisomerase I," <i>Proc. Natl. Acad. Sci. U S A.</i> 93(2):785-9. (1996) National Academic of Sciences.
	BAU	Shuman, "Analysis of Topoisomerase-DNA Interactions by Electrophoretic Mobility Shift Assay," <i>Methods Mol. Biol.</i> 95:65-74(2001) Hunana Press, Inc.
	BAV	Shuman, "Polynucleotide Ligase Activity of Eukaryotic Topoisomerase I," <i>Mol. Cell.</i> 1(5):741-8. (1998) Cell Press.
	BAW	Shuman, "Vaccinia Virus DNA Topoisomerase: a Model Eukaryotic Type IB Enzyme," <i>Biochim. Biophys. Acta.</i> 1400(1-3):321-37. (1998) Elsevier Science.

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O W	BAX	Shuman, "Vaccinia Virus DNA Ligase: Specificity, Fidelity, and Inhibition," <i>Biochemistry</i> 34:16138-16147 (1995) American Chemical Society.
	BAY	Shuman, "Novel Approach to Molecular Cloning and Polynucleotide Synthesis Using Vaccinia DNA Topoisomerase" <i>J. Biol. Chem.</i> 269(51):32678-32684 (1994).
	BAZ	Shuman, "DNA Strand Transfer Reactions Catalyzed by Vaccinia Topoisomerase I", <i>J. Biol. Chem.</i> 267:8620-8627. (1992) The American Society for Biochemistry and Molecular Biology, Inc.
	CAA	Shuman, "Two Classes of DNA End-Joining Reactions Catalyzed by Vaccinia Topoisomerase I", <i>J. Biol. Chem.</i> 267:16755-16758. (1992) The American Society for Biochemistry and Molecular Biology, Inc.
	CAB	Shuman, "Recombination Mediated by Vaccinia Virus DNA Topoisomerase I In Escherichia coli is Sequence specific," <i>Proc. Natl. Acad. Sci. U S A</i> 88(22):10104-8 (1991) National Academic of Sciences.
	CAC	Shuman, "Site-Specific DNA Cleavage by Vaccinia Virus DNA Topoisomerase I. Role of Nucleotide Sequence and DNA Secondary Structure," <i>J. Biol. Chem.</i> 266(3):1796-1803 (1991) The American Society for Biochemistry and Molecular Biology, Inc.
	CAD	Shuman, "Site-Specific Interaction of Vaccinia Virus Topoisomerase I with Duplex DNA. Minimal DNA Substrate for Strand Cleavage in vitro," <i>J. Biol. Chem.</i> 266(17):11372-11379 (1991) The American Society for Biochemistry and Molecular Biology, Inc.
	CAE	Shuman, "Vaccinia DNA Topoisomerase I Promotes Illegitimate Recombination in Escherichia coli," <i>Proc. Natl. Acad. Sci. U S A</i> 86(10):3489-93 (1989) National Academic of Sciences.
	CAF	Shuman and Moss, "Identification of a Vaccinia Virus Gene Encoding a Type I DNA Topoisomerase," <i>Proc. Natl. Acad. Sci., U S A</i> 84:7478-7482. (1987) National Academic of Sciences.
	CAG	Shuman and Prescott. "Specific DNA Cleavage and Binding of Vaccinia Virus DNA Topoisomerase I" <i>J. Biol. Chem.</i> 265:17826-17836. (1990) The American Society for Biochemistry and Molecular Biology, Inc.

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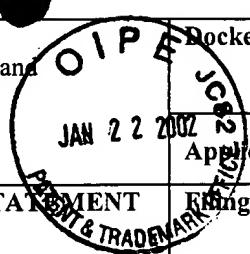
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<i>CD</i>	CAH	Shuman and Turner, "Site-Specific Interaction of Vaccinia Virus Topoisomerase I with Base and Sugar Moieties in Duplex DNA," <i>J. Biol. Chem.</i> 268(25):18943-50 (1993) The American Society for Biochemistry and Molecular Biology, Inc.
	CAI	Shuman, et al., "Intramolecular Synapsis of Duplex DNA by Vaccinia Topoisomerase," <i>EMBO J.</i> 16(21):6584-9 (1997) Oxford University Press.
	CAJ	Shuman, et al., "Insertional Mutagenesis of the Vaccinia Virus Gene Encoding a Type I DNA Topoisomerase: Evidence that the Gene is Essential for Virus Growth," <i>Virology</i> 170(1):302-6 (1989) Academic Press, Inc.
	CAK	Shuman, et al., "Mapping the Active-Site Tyrosine of Vaccinia Virus DNA Topoisomerase I," <i>Proc. Natl. Acad. Sci. U S A.</i> 86(24):9793-7 (1989) National Academic of Sciences.
	CAL	Shuman, et al., "Characterization of Vaccinia Virus DNA Topoisomerase I Expressed in Escherichia coli", <i>J. Biol. Chem.</i> 263:16401-16407. (1988) The American Society for Biochemistry and Molecular Biology, Inc.
	CAM	Stivers, et al., "Stereochemical Outcome and Kinetic Effects of Rp- and Sp- Phosphorothioate Substitutions at the Cleavage Site of Vaccinia Type I DNA Topoisomerase," <i>Biochemistry</i> 39(18):5561-72. (2000) American Chemical Society.
	CAN	Stivers et al., "Vaccinia DNA Topoisomerase I: Kinetic Evidence for General Acid-Base Catalysis and a Conformational Step," <i>Biochemistry</i> 33(51):15449-58 (1994) American Chemical Society.
	CAO	Stivers, et al., "Vaccinia DNA Topoisomerase I: Single-Turnover and Steady-State Kinetic Analysis of the DNA Strand Cleavage and Ligation Reactions," <i>Biochemistry</i> 33(1):327-39 (1994) American Chemical Society.
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EXAMINER	<i>Cynthia Wiles</i>	DATE CONSIDERED
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Applicants: Heyman et al.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	SEARCHED & TRADEMAKED SEARCHED FILING DATE: September 19, 2001	GROUP ART UNIT: Unknown
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CW	CAR	Wexler, et al., "A Procedure to Amplify cDNA from dsRNA Templates Using the Polymerase Chain Reaction," <i>Methods in Molecular and Cellular Biology</i> 2:273-279 (1991).
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